Claims

What is claimed is:

1. An engine control system suited for use with an engine that outputs electrical power to a local load and is electrically connected to an electrical grid, the engine control system comprising:

a set point control operable to set an engine power output value;

a sensor operable to measure an electrical parameter between the engine and the electrical grid; and

a master control system operable to maintain the engine electrical power at about the engine power output value, the master control system also operable to vary the engine power output value to maintain the electrical parameter above a non-zero predetermined value.

2. The engine control system of claim 1, wherein the engine includes a combustion turbine that drives a synchronous generator.

3. The engine control system of claim 1, wherein the sensor is a current sensor and the electrical parameter is a flow of current between the electrical grid and the engine.

4. The engine control system of claim 3, wherein the flow of current passes in one of a first direction and a second direction.

5. The engine control system of claim 3, wherein the master control system varies the engine power output value to maintain the absolute value of the flow of current above 100 amps.

6. The engine control system of claim 3, wherein the master control system varies the engine power output value to maintain the absolute value of the flow of current above 500 amps.

7. A combustion turbine engine operable to provide electrical power to a local load, the engine comprising:

a compressor operable to produce a flow of compressed air;

a combustor receiving the flow of compressed air and a flow of fuel and producing a flow of products of combustion;

a turbine rotating in response to the flow of products of combustion;

a generator driven by the turbine and operable to output a quantity of electrical power, the generator including a first electrical connection to deliver electrical power to the local load and a second electrical power connection that interconnects the generator and the electrical grid;

a sensor measuring an electrical parameter in the second electrical connection; and

a master control system operable to vary the flow of fuel to the combustor to maintain the quantity of electrical output at a preset level, the master control system also operable to vary the preset level in response to a measured electrical parameter below a non-zero predetermined value.

8. The combustion turbine engine of claim 7, wherein the first electrical connection includes a load bus and the second electrical connection interconnects the load bus and the electrical grid such that electrical power can be delivered from the load bus to the electrical grid and power can be delivered from the electrical grid to the load bus.

9. The combustion turbine engine of claim 8, wherein the generator is electrically connected to the load bus and the local load is electrically connected to the load bus.

10. The combustion turbine engine of claim 7, wherein the generator includes a synchronous generator.

11. The combustion turbine engine of claim 7, wherein the sensor is a current sensor and the electrical parameter is a flow of current flowing through the second electrical connection.

12. The combustion turbine engine of claim 11, wherein the flow of current passes in one of a first direction and a second direction.

13. The combustion turbine engine of claim 11, wherein the master control system varies the engine power output value to maintain an absolute value of the flow of current above 100 amps.

14. The combustion turbine engine of claim 11, wherein the master control system varies the engine power output value to maintain the absolute value of the flow of current above 500 amps.

15. A method of operating an engine that provides electrical power to a local load and is electrically connected to an electrical grid, the method comprising:

inputting a total power set point into a master control system;

operating the engine to produce a power output that is substantially equal to the total power set point;

measuring an electrical parameter at a point between the engine and the electrical grid; and

changing the total power set point in response to the measured electrical parameter below a predetermined non-zero value.

16. The method of claim 15, further comprising periodically varying a load applied to the engine.

17. The method of claim 16, further comprising measuring an electrical parameter between the engine and the local load.

18. The method of claim 15, wherein the measuring step includes measuring a current flow between the engine and the electrical grid.

19. The method of claim 15, wherein the master control system maintains the power output of the engine at a value that is substantially equal to the total power set point.

20. The method of claim 15, wherein a master control system changes the total power set point in response to a measured electrical parameter below a predetermined value.

21. A method of operating a power generation unit electrically communicating with a bus that is electrically communicating with a grid and that provides electrical power to a load, the method comprising:

establishing a non-zero minimum power flow value for power flowing between the grid and the bus; and

adjusting the power output of the power generation unit to not match the load and to maintain the absolute value of power flow between the grid and the bus above the minimum power flow value.

22. The method of claim 21, further comprising measuring the power flow between the grid and the bus.

23. The method of claim 22, wherein the adjusting the power output of the power generation unit includes adjusting a power output set point in response to the absolute value of the measured power flow falling below the minimum power flow value.

24. The method of claim 21, further comprising measuring the power output of the power generation unit.

25. A power generation system operable to deliver electrical power to at least one of a local load and a grid, the system comprising:

a local load bus electrically connected to the grid and providing electrical power to a local load;

a set point control operable to set a system power output value;

a plurality of engine-generator sets electrically connected to the local load bus, at least one of the plurality of engine-generator sets operable to deliver a quantity of power to the local load bus;

a sensor operable to measure an electrical parameter between the plurality of engine-generator sets and the grid; and

a master control system operable to maintain the quantity of power generated by the at least one of the plurality of engine-generator sets at about the system power output value, the master control system also operable to vary the system power output value such that the quantity of power delivered to the local load bus is not equal to the local load.

26. The power generation system of claim 25, wherein each of the plurality of engine-generator sets includes a combustion turbine.

27. The power generation system of claim 25, wherein the sensor is a current sensor and the electrical parameter is a flow of current between the grid and the local load bus.

28. The power generation system of claim 27, wherein the flow of current is maintained at a non-zero value and passes in one of a first direction and a second direction.

29. The power generation system of claim 25, wherein the master control system is operable to initiate and terminate operation of each of the plurality of engine-generator sets.

30. The power generation system of claim 25, wherein the master control system establishes a power output set point for each of the plurality of engine-generator sets.